

Applicant : Shackleford et al.
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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A computer-implemented method for software emulation of a cellular automata based random number generator (CA-based RNG), comprising:

determining a set of emulation parameters for the CA-based RNG;

initializing the software emulation according to the emulation parameters;

storing state values from odd-numbered cells in a first software variable and state values from even-numbered cells in a second software variable wherein word operations on the first and second variables enable the simulation of the cells to occur in parallel when executed; and

outputting a random number having the state values stored in the first software variable and the second software variable.

2. (previously presented) The computer-implemented method of claim 1 wherein the set of emulation parameters include at least one of a seed, a number of runs a cell truth table, interconnection displacement values, and an output designation.

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3. (previously presented) The computer-implemented method of claim 1 wherein determining the set of emulation parameters includes retrieving said emulation parameters from at least one of a user, a file, a database, and a remote source.

4. (previously presented) The computer-implemented method of claim 1 wherein determining the set of emulation parameters includes providing default values for any emulation parameters not received from an external source.

5. (previously presented) The computer-implemented method of claim 1 wherein storing state values from odd-numbered cells in a first software variable and state values from even-numbered cells in a second software variable effects parallel site spacing.

6. (previously presented) The computer-implemented method of claim 1 wherein outputting a random number comprises destinations that include at least one of a display, a file, a database, an application, and a remote destination.

7. (previously presented) A computer-implemented method to generate a software code emulating a cellular automata based random number generator (CA-based RNG), comprising:

determining RNG parameters;

determining one or more programming language templates;

determining functional definition of the CA-based RNG;

determining initialization routines for the CA-based RNG;

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determining simulation routines for the CA-based RNG;

determining simulation results destination routines for the CA-based RNG; and

outputting code for the CA-based RNG.

8. (previously presented) The computer-implemented method of claim 7, wherein the RNG parameters include at least one of an interconnection topology, a length of the desired CA-based RNG, a cellular automata truth table, one or more desired output programming language languages, one or more code output destinations, and site spacing specification.

9. (previously presented) The computer-implemented method of claim 7, wherein determining RNG parameters includes retrieving emulation parameters from at least one of one of a user, a file, a database, and a remote source.

10. (previously presented) The computer-implemented method of claim 7, wherein determining RNG parameters includes providing default values for any parameters not received from an external source.

11. (previously presented) The computer-implemented method of claim 7, wherein determining programming language templates includes retrieving programming language templates from at least one of one of a user, a file, a database, and a remote source.

12. (previously presented) The computer-implemented method of claim 7, wherein determining programming language templates includes providing at least one default language template in response to no language being specified from an external source.

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13. (previously presented) The computer-implemented method of claim 7, wherein determining programming language templates includes providing at least one built-in language template in response to no language being specified from an external source.

14. (previously presented) The computer-implemented method of claim 7, wherein determining functional definition includes generating a Boolean sum-of-products equation for the CA-based RNG.

15. (previously presented) The computer-implemented method of claim 7, wherein determining simulation routines includes generating code for one or both of operations for parallel simulation and operations for parallel site spacing.

16. (previously presented) The computer-implemented method of claim 7, wherein determining simulation result destination routines includes generating code for destinations of simulation results for a set including at least one of a display, a file, a database, an application, and a remote destination.

17. (previously presented) The computer-implemented method of claim 7, wherein outputting code includes destinations for the code including at least one from a set of a display, a file, a database, a compiler, a remote destination, and an interpreter.

18. (previously presented) A computer system having one or more modules for generating software code to emulate a cellular automata based random number generator (CA-based RNG), said computer system comprising:

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a RNG-parameter module that determines RNG parameters,

a language-template module that determines language templates, and

code-generating module that generates code for emulating said CA-based RNG.

19. (previously presented) The computer system of claim 18, wherein the RNG parameters include at least one of an interconnection topology, a length of the CA-based RNG, a cellular automata truth table, one or more desired output programming language languages, one or more code output destinations, and site spacing specification.

20. (previously presented) The computer system of claim 18, wherein the RNG parameter-module retrieves the emulation parameters from at least one of a set including one of a user, a file, a database, and a remote source.

21. (previously presented) The computer system of claim 18, wherein the RNG parameter-module provides default values for RNG parameters not received from an external source.

22. (previously presented) The computer system of claim 18, wherein the language-template-module retrieves the language templates from at least one of one of a set including a user, a file, a database, and a remote source.

23. (previously presented) The computer system of claim 18, wherein the language-template-module provides at least one default language template in response to no language being specified from an external source.

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24. (previously presented) The computer system of claim 18, wherein the language-template-module provides at least one built-in language template in response to no language being specified from an external source.

25. (previously presented) The computer system of claim 24, wherein the code-generating-module further comprises:

a functional-definition-module that generates a functional definition of said CA-based RNG;

an initialization-generation-module that generates initialization routines;

a simulation-generation module that generates simulation routines; and

an output-generation-module that generates simulation result output routines.

26. (previously presented) The computer system of claim 25, wherein the functional-definition-module generates a Boolean sum-of-products equation for said CA-based RNG.

27. (previously presented) The computer system of claim 25, wherein the simulation-generation-module generates code for one or both of operations for parallel simulation and operations for parallel site spacing.

28. (previously presented) The computer system of claim 25, wherein output destinations simulation result output routines generated by the output-generation-module include at least one of a set including a display, a file, a database, an application, and a remote destination.

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29. (previously presented) The computer system of claim 18, wherein in the code-generating-module outputs the generated code to at least one of a set including a display, a file, a database, a compiler, a remote destination, and an interpreter.